

Remarks

This is in response to the final Office Action mailed on January 26, 2005. Claims 21-33 remain pending. Reconsideration and allowance are respectfully requested for at least the following reasons.

Claims 21-33 were rejected in section 2 of the Office Action under 35 U.S.C. § 102(b) as being anticipated by Takashi et al., U.S. Patent No. 6,077,154. This rejection is respectfully traversed for at least the following reasons.

Claim 21 is directed to a method for removing a hackle of an optical fiber from an end face of a ferrule, including placing a ferrule in a fixture, and mechanically bringing the end face of the ferrule into contact with a polishing structure such that the hackle is removed.

It is respectfully suggested that one skilled in the art at the time of invention would understand the term "hackle" to refer to a defect including surface irregularities created on an end face of a fiber during cleaving of the fiber. For example, Figure 1A of U.S. Patent No. 3,934,773 illustrates a fiber 10 with hackle 12. See also col. 2, ll. 30-36.

In prior art methods for hackle removal known to Applicant, hackle was removed from the fiber using a manual, handle-polishing process prior to any polishing by a machine polisher. See Application, p. 6, ll. 3 and 4. A hand-polishing process was used to remove hackle because the hackle typically included one or more sharp surfaces. If a ferrule including hackle was polished using a machine polisher, the sharp surfaces of the hackle could cut or tear the polishing film of the machine polisher due to the pressure applied between the ferrule and the polishing film.

For embodiments of the present application, the tendency for the hackle to cut the polishing structure is reduced by controlling the amount of pressure applied between the ferrule and polishing structure. In this manner, hackle removal can be automated using the machine polishing process, thereby increasing conformity between ferrules. Application, p. 6, ll. 4-6.

It is respectfully suggested that Takashi fails to disclose or suggest a method for removing a hackle. Takashi simply discloses a polishing apparatus for optical fibers and fails to disclose hackle removal.

The rejection cites the following section of Takashi as disclosing hackle removal:

It is conventionally difficult to obtain a high-quality polishing result because a ferrule to be polished is hit to a rotating polishing board so as to drop

the ferrule onto the board or rotation of a stopping polishing board is started after securing the ferrule on the board and thereby, an optical fiber protruded from the end surface of the ferrule integrally with an adhesive is forcibly plucked off and resultingly, a deep flaw or crack is produced on the cross section of the optical fiber. However, an effective result is obtained by slow contact (normally referred to as soft landing) and slow grinding as described above.

Takashi, col. 10, ll. 9-19 (underlining added). This characterization of Takashi is respectfully traversed for the following reasons.

It is respectfully suggested that this section of Takashi describes a problem associated with a conventional "high-quality polishing" process. Specifically, this section of Takashi describes the problem associated with bringing the end face of the ferrule into contact with the polishing surface too quickly and with too great a force, resulting in a portion of the fiber and associated adhesive being "plucked off" and the creation of a flaw or crack in the remaining fiber. See the underlined portions above. Takashi discloses "soft landing" and "slow grinding" to reduce the potential for this problem associated with polishing. It is respectfully suggested that this polishing method disclosed by Takashi has nothing to do with hackle removal.

For at least these reasons, Takashi does not disclose or suggest a method for removing a hackle of an optical fiber, as recited by claim 21. Reconsideration and allowance of claim 21, as well as claims 22-27 that depend therefrom, are therefore respectfully requested.


Claim 28 is directed to a method for removing hackle. Claim 28 recites, among other limitations, moving the arm of a polishing apparatus using a mechanical lift so that a plurality of ferrules come into contact with a polishing surface, and driving the polishing surface using a drive mechanism such that the hackle is removed. Therefore, claim 28, as well as claims 29-33 that depend therefrom, should be allowable for at least reasons similar to those provided above with respect to claim 21. Reconsideration and allowance are respectfully requested.

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. The Examiner is invited to telephone the undersigned at the below-listed telephone number if the Examiner believes a telephone conference would advance the prosecution of this application.

Respectfully submitted,

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